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SCIENCE.—SUPPLEMENT.

FRIDAY, APRIL 29, 1887.

HEALTH MATTERS.

A theory of consumption.

THE origin of consumption continues to be a subject of discussion and also of experimentation. Several theories have been advanced and evidence adduced for their support. The older idea was that the disease was hereditary, and that one in whom the 'seeds of consumption' were planted, as it was expressed, was already condemned. Subsequently the dampness of the soil was declared to be the principal factor in producing the disease. Still more recently the theory of contagion has been developed, and the bacillus tuberculosis has been regarded by Koch and his followers as its germ. While there are some who maintain that heredity is never to be considered as a factor, the majority of physicians are not prepared to accept this, even though they may be inclined to look upon the bacillus as playing the principal rôle.

During the past year a fourth theory has been advanced by G. W. Hambleton, licentiate of the King's and Queen's college of physicians, Ireland. The theory that consumption is caused by climatic conditions, changes of temperature, or wetness of soil, he combats most vigorously. Instead of being limited to, or even more prevalent in, any particular climate, he finds it co-extensive with the civilized world. That it is more prevalent below than above certain altitudes does not help the theory much, for within these same limits are found living the vast majority of the human race free from the disease. At Madrid and certain cities in South America which are at high altitudes, phthisis exists, while among some Asiatic tribes inhabiting districts lying below the sea-level, it is unknown. In cold climates, as Canada and Sweden, there is little consumption; and the same is true of those classes most exposed to cold in all regions. In the severe winter of 1854-55, fewer men died from it in camp at Sevastopol than in the barracks at home. In France, consumption prevails least in that department which has the dampest soil; and in Lincolnshire, as drainage is introduced, the ague disappears, and consumption takes its place. In reference to the bacillar origin of the disease, he claims that neither physicians, clinical clerks, nor nurses, who

are constantly exposed to the bacilli, have ever been known to become phthisical through attendance at hospitals where consumptive patients are treated.

Wherever civilized men permanently congregate, whether on the level of the sea or at any altitude, in every part of the world, irrespective of what is called climate, there consumption is to be found or speedily makes its appearance. The natives of America, Africa, and the South Sea Islands were entirely free from consumption till they came in intimate relationship with civilized Europeans. Even now in the interior of Africa there are tribes, who have not come in contact with civilized men, that are absolutely free from this scourge. Phthisis is a disease of civilization, and in the conditions of civilized life must be sought an explanation of its cause. Those dwelling in cities are more affected than those living in the country, and those engaged in sedentary occupations than those living in the open air, consumption being remarkably low in agriculturists and fishermen, and rare among gypsies. The military life ranks high in the list of those occupations that are favorable to consumption.

The explanation given by Mr. Hambleton of these facts is, that man, in a state of civilization, does not hold himself erect: he stoops more or less. The weight of his shoulders is thrown on the thorax, and consequently the latter is impeded in its movement, and his chest is narrow. Man, in the uncivilized state, holds himself erect; the weight of his arms is borne by the spine; his chest is broad, well developed, and freely movable; and he passes the whole of his existence in active exercise in the open air. The trades and occupations that supply the greatest number of cases are those in which small particles of various substances are constantly inhaled, those that necessitate little movement or even a cramped position of the chest, and those where a considerable time is spent in small and badly ventilated rooms. In the army those who become phthisical are those who have a chest capacity below the average. In short, the conditions that produce consumption are those that reduce the capacity of the lungs below a certain point.

In support of this theory, Mr. Hambleton gives the results of some experimental investigations which he has made, in the form of the following propositions: 1°. That artificially induced reduction of the breathing surface of the lungs below a

certain point, together with the prevention of compensatory action of other organs, is followed by a local and general state not to be distinguished from consumption; 2°. That arrest of this artificially induced reduction of the breathing surface of the lungs, together with induced compensatory action of other organs, is followed by relief of the prominent symptoms, and improvement of the general state; 3°. That artificially induced full development of the breathing surface of the lungs is followed by an entire absence of all symptoms of disease, and by general good health.

In corroboration of these propositions, Mr. Hambleton calls attention to the invariable association of phthisis with confinement. In a convent in Paris all the nuns became phthisical, while the portress, who was not subjected to the same regulations, and went out daily for supplies, remained in good health. Perfectly healthy men, brought up in the country, have gone into towns, and engaged in occupations that either necessitated long hours, in close rooms, in cramped positions, or the inhalations of particles of dust, and after a time have become ill with all the symptoms of consumption. This disease has thus been shown to be produced by two distinct sets of conditions: in the one we have those that reduce the breathing capacity by habitual disease of the lungs; and in the other, those that reduce the breathing capacity either by habitual compression of the chest or by injury to the lungs.

The prevention of consumption is, according to this theory, a very simple one, — to place all persons under conditions of habitation, clothing, education, and habits that tend individually and collectively to develop the lungs, and that prevent or obviate compression of the chest or injury to the lungs. These views of Mr. Hambleton are very fully set forth in a brochure entitled 'What is consumption?' and in a paper read at a meeting of the British association, on the scientific prevention of consumption.

SOME months ago a number of persons went from Glasgow to Loch Fyne to see a large blasting operation in which six and one-half tons of gunpowder were exploded. A short time after the explosion many of the observers became faint, six of the number died almost immediately, one died shortly after, and five others were very ill but recovered. The cause of death is believed to have been the carbonic oxide generated from the gunpowder. It is estimated that the amount must have been 468 pounds, — a quantity sufficient to occupy 6,333 cubic feet of air space, or to vitiate for respiratory purposes a space one hundred times

as great. There were also generated 3,575 pounds of carbonic anhydride; so that, in all, there were 1,266,000 cubic feet of air rendered irrespirable.

— Dr. D. F. Lincoln, in a letter to the *Boston medical and surgical journal*, narrates a personal experience in Savannah with a kerosene-stove. In a room containing 1,100 cubic feet of air space, he introduced a kerosene-stove for heating-purposes, being able to raise the temperature by its means eighteen degrees. Although there was some odor, nevertheless he did not experience any personal discomfort. One evening he noticed that the reading-lamp was dim, the flame having shrunk to half its size. When he carried it into the entry, it burned brightly. He subsequently tested the air with Walpert's air-testing apparatus, and found the amount of carbonic acid had reached sixty-seven parts per thousand, the normal amount being three or four parts. Each of the two burners in the stove was four inches in length, and generated as much carbonic acid as eight or ten common lamps. In a well-built house with tight doors the effect might be doubled.

— In the *British medical journal* are reported two cases of chronic cocaine-poisoning. The patients were a man and wife who had formerly been addicted to opium, and who had taken cocaine as an antidote. They commenced with small doses, but finally took daily 2.5 grams hypodermically. The prominent symptoms were incoherence of ideas and optical delusions. They saw on their hands, on the beds and walls, small spots and worms of all forms. Complete recovery followed the discontinuance of the cocaine.

— The figures representing the mortality of a great city like London for a single week are appalling. During the week ending Jan. 1, 1887, there were registered in that city 1,899 deaths, of which 114 were from measles, 25 from scarlet-fever, 27 from whooping-cough, and 17 from typhoid-fever: 74 deaths were caused by violence, 66 being the result of negligence or accident, and 7 being suicides.

— A physician of Cairo has been treating an opium habitué with cocaine, the result being that a cocaine habit was soon established, the patient so enjoying the sensation produced by the drug as to be led to use it on the slightest provocation. At one time the amount injected hypodermically was one and a half grams daily. As a result, he suffered from a condition similar to delirium tremens, became greatly agitated, and had hallucinations. He fired a pistol at imaginary objects, attacked his servant, and was at last put into a hospital. He recovered subsequently, injections of morphine being the treatment adopted.